

CLAIMS:

1. An electrostatic suction type fluid discharge device which discharges by electrostatic suction a discharge fluid, which is electrically charged by voltage application, onto a substrate through a fluid discharge hole of a nozzle of a fluid discharge head, so as to form a drawing pattern on a surface of the substrate,

the fluid discharge hole, provided in the nozzle, having a diameter ranging from 0.01 μm to 25 μm ,

the electrostatic suction type fluid discharge device comprising an electrode section for carrying out application of a driving voltage, causing an electric charge to be supplied to the discharge fluid, so as to charge the discharge fluid, the electrode section being formed by coating an external wall of the nozzle with a conductive material.

2. The electrostatic suction type fluid discharge device according to claim 1, wherein the electrode section constitutes at least a part of inner wall of the nozzle.

3. An electrostatic suction type fluid discharge device which discharges by electrostatic suction a discharge fluid, which is electrically charged by voltage application, onto a substrate through a fluid discharge

hole of a nozzle of a fluid discharge head, so as to form a drawing pattern on a surface of the substrate,

the fluid discharge hole, provided in the nozzle, having a diameter ranging from 0.01 μm to 25 μm ,

the nozzle having a tip made of a conductive material, the tip serving as an electrode section for applying a drive voltage to electrically charge the discharge fluid.

4. The electrostatic suction type fluid discharge device according to any one of claims 1 through 3, further comprising pressure applying means for applying a pressure into the nozzle.

5. An electrostatic suction type fluid discharge device which discharges by electrostatic suction a discharge fluid, which is electrically charged by voltage application, onto a substrate through a fluid discharge hole of a nozzle of a fluid discharge head, so as to form a drawing pattern on a surface of the substrate,

the fluid discharge hole, provided in the nozzle, having a diameter ranging from 0.01 μm to 25 μm ,

the electrostatic suction type fluid discharge device comprising an electrode section provided inside the nozzle, the electrode section for carrying out application of a driving voltage, causing an electric charge to be supplied

to the discharge fluid, so as to charge the discharge fluid,

an inner wall of a tip of the nozzle has a taper section with a taper angle θ of 21° or greater, provided that $L/d > 5$, where L is a taper length and d is a nozzle diameter.

6. An electrostatic suction type fluid discharge device which discharges by electrostatic suction a discharge fluid, which is electrically charged by voltage application, onto a substrate through a fluid discharge hole of a nozzle of a fluid discharge head, so as to form a drawing pattern on a surface of the substrate,

the fluid discharge hole, provided in the nozzle, having a diameter ranging from $0.01\ \mu\text{m}$ to $25\ \mu\text{m}$,

the electrostatic suction type fluid discharge device comprising an electrode section provided inside the nozzle, the electrode section for carrying out application of a driving voltage, causing an electric charge to be supplied to the discharge fluid, so as to charge the discharge fluid,

an inner wall of a tip of the nozzle having a taper section with a taper angle θ satisfying a condition: $\theta > 58 \times d/L$, where L is a taper length and d is a nozzle diameter, provided that $L/d < 100$.

7. The electrostatic suction type fluid discharge

- 43 -

device according to claim 5 or 6,

wherein the electrode section is formed as a bar inserted into the nozzle and a tip of the electrode section is in contact with the inner wall of the taper section.